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A NEW SPECIES OF ANEMONE-CARRYING CRAB FROM NEW CALEDONIA (DECAPODA: BRACHYURA: XANTHIDAE: POLYDECTINAE)

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Abstract.—A new species of polydectine crab, *Lybia tutelina,* from New Caledonia is described. It differs from other *Lybia* species in the structure of the male first gonopods, endopod of the first maxilliped, more rounded shape of the carapace, structure of the antennary fossae, and anterolateral margin of carapace. *L. tutelina* appears to be related to *L. hatagumoana* Sakai, 1961, from Japan, but the carapace, chelae and gonopods of the two species are substantially different.

Members of Polydectinae Dana, 1851, are generally recognized by their anemone-carrying behavior which presumably serves a protective function. The Polydectinae presently consists of only two genera: *Lybia* H. Milne Edwards, 1834, and *Polydectus* H. Milne Edwards, 1837. The genus *Lybia* consists of nine species: *L. australiensis* (Ward 1933), *L. caestifera* (Alcock 1896), *L. denticulata* Nobili, 1906, *L. edmondsoni* Takeda & Miyake, 1970, *L. hatagumoana* Sakai, 1961, *L. leptochelis* (Zehntner 1894), *L. plumosa* Barnard, 1947, *L. pugil* (Alcock 1896) and *L. tessellata* (Latreille 1812).

Partial revisions of the Polydectinae have been carried out by Guinot (1976) and Serène (1984). Both recognized three distinct groups within *Lybia*: the *L. tesellata* and *L. edmondsoni* group, the *L. plumosa* and *L. leptochelis* group, and *L. denticulata* by itself, this species being regarded as an intermediary between *Polydectus* and *Lybia.* This separation was based on characters such as structure of the carapace, the anterolateral border, the endopods of the first and third maxillipeds, the sternal plastrons, the chelipeds and the male first pleopod. Guinot (1976) did not, however, decide on the status of *L. australiensis, L. caestifera, L. hatagumoana* and *L. pugil* because she was unable to examine the type or other specimens of these species.

One species, *L. australiensis,* was originally placed in the genus *Prolybia* Ward, 1933. The species has not been reported since 1933. Serène (1968, 1984), Sakai (1967) and Guinot (1976) regarded *Prolybia* as a synonym of *Lybia.* The validity of the genus *Prolybia* can only be ascertained when its type species is re-examined.

In this paper, a new species of polydectine from New Caledonia, *Lybia tutelina,* is described. This species, with *L. hatagumoana,* appears to comprise yet another group within *Lybia.*

The abbreviations G1 and G2 are used for the male first and second pleopods respectively. Measurements (in millimeters) of the carapace are given as length times width. The acronym ORSTOM refers to Institut Francais de Recherche Scientifique pour le Développement en Coopération, Paris. The type specimen is deposited in the Muséum national d'Histoire naturelle (MNHN), Paris.

Family Xanthidae MacLeay, 1838
Subfamily Polydectinae Dana, 1851
Lybia tutelina, new species
Figs. 1, 2

Material examined.—Holotype male (MNHN-22773) 5.3 × 5.3 mm, New Caledonia, R/V *Alis,* Stn. DW 1174, coll. B.

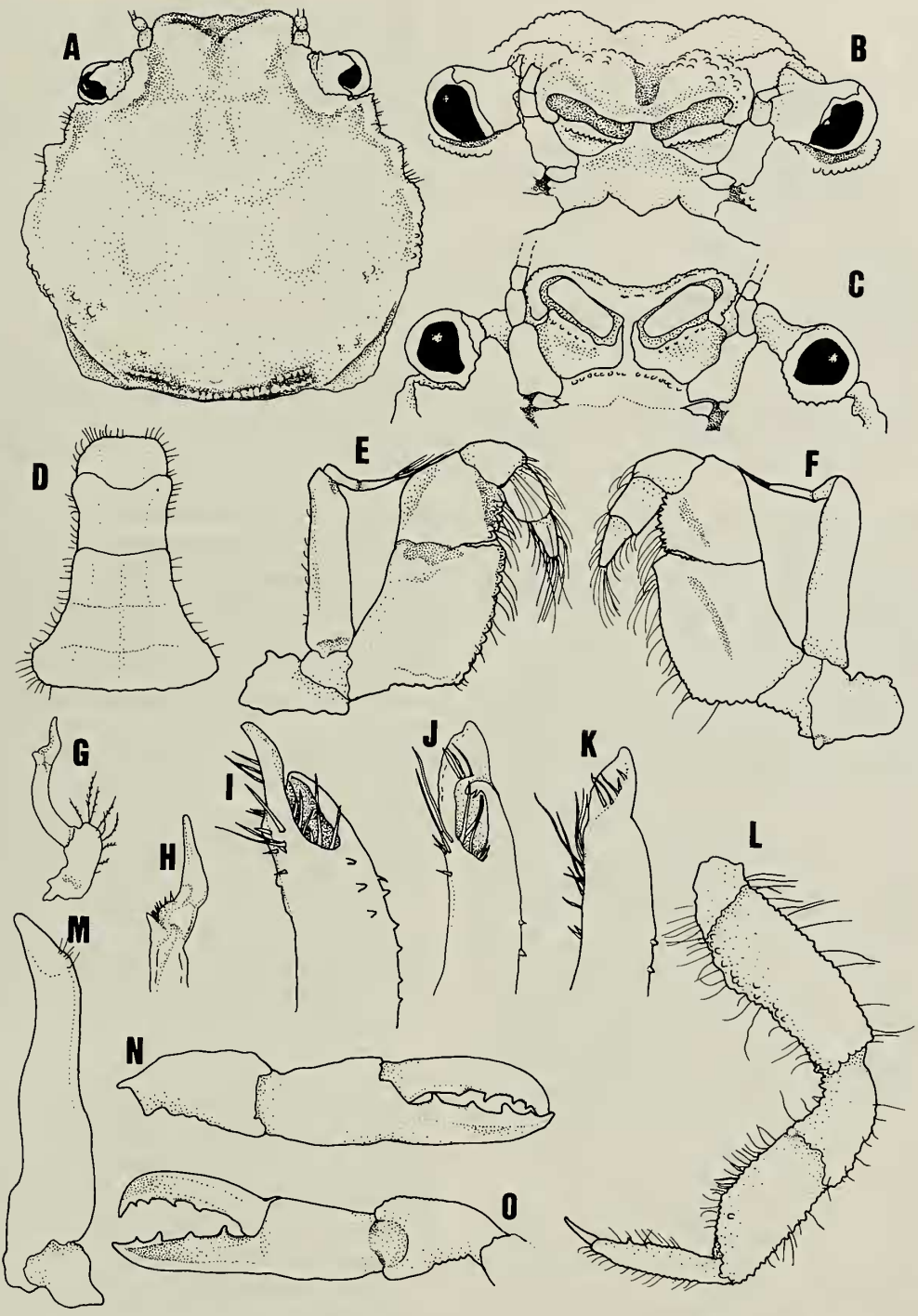

Fig. 1. *Lybia tutelina,* new species, holotype male (5.3 × 5.3 mm). A, carapace, dorsal surface; B, same frontal view; C, same front, ventral view; D, abdomen, excluding segments 1 and 2; E, left third maxilliped, inner surface; F, left third maxilliped, outer surface; G, right G2; H, tip of right G2; I–K, tip of right G1; L, right last leg, upper surface; M, right G1; N, right cheliped, outer surface; O, right cheliped, inner surface.

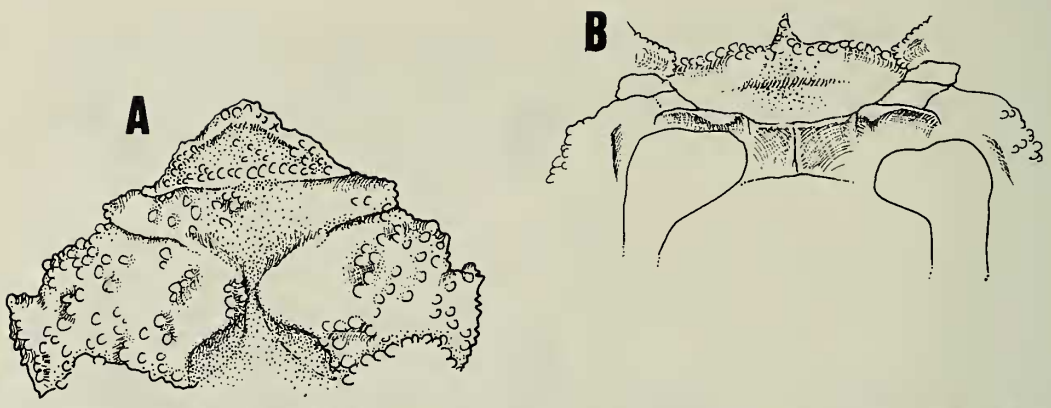

Fig. 2. *Lybia tutelina,* new species, holotype male (5.3 × 5.3 mm). A, anterior sternum; B, buccal region and endopods of first maxillipeds.

Richer de Forges, ORSTOM, 31 Oct 1989. Paratype female (MNHN-22774) 6.2 × 6.2 mm [ovigerous], New Caledonia, South Great Reef, Stn. 378bis, 74–76 m, 22°33′S–167°09′E, coll. B. Richer de Forges, ORSTOM, 21 Jan 1985.

Description of holotype male.—Carapace sub-globular, as long as broad, surface finely granular, sparsely pubescent, particularly at margins, anterior region between orbits raised to form 2 convexities posterior to front; anterolateral margin with 3 broad, triangular lobes (including external orbital angle), posterior-most being rather irregularly shaped, and lower than first two, each lobe bordered by fine granules; posterolateral margin rounded; posterior border with 2 rows of granules. Front squarish, slightly deflexed, with shallow median cleft. Margin of orbits lined with granules, supraorbital margin with cleft just behind cornea, infraorbital margin divided into 2 large pointed lobes. Posterior margin of carapace distinctly granulated. Antennal flagellum long, slender, basal segment large, elongate and rectangular, free, completely occupying orbital hiatus; antennular fossa oblique, basal segment large, free, anterior border with row of fine granules. Posterior margin of epistome with triangular central lobe. Inner margin of third maxillipeds with long setae; ischium 1.4 times longer than merus when measured along inner border, rectangular, inner margin coarsely granular, outer surface with weak, oblique, median sulcus; exopod slender, reaching to level of posterior half of merus; merus rounded along outer margin, inner margin with pointed granules, outer surface with short, weak, oblique median sulcus, palp 3-segmented, robust. Endopod of first maxilliped with straight anterior edge; inner angle rounded, inner margin curving gently outwards; outer angle sub-perpendicular, outer margin straight.

Anterior sternum coarsely granular, particularly around edges, sternite 4 demarcated from sternite 3 by shallow groove, sternites 3 and 2 separated by clear, moderately shallow groove, no suture between sternites 1 and 2.

Ambulatory legs short and thick, finely granular, inner edges appearing more coarsely granular than outer edges, edges sparsely pubescent. Chelipeds equal, symmetrical, slender, elongate; palm rectangular, fingers 1.4 times longer than palm, movable finger with hooked tip, cutting edge with 3 large, backward-pointing teeth and 1 denticle subdistally, immovable finger with 3 evenly spaced teeth and 1 denticle subdistally.

Abdomen sparsely hairy along borders,

Table 1.—Differences between *L. tutelina* and *L. hatagumoana*.[a]

	Lybia tutelina	*Lybia hatagumoana*
Carapace	As long as broad	Slightly longer than broad
Male abdomen	Segments 3–5 fused	All segments free[b]
G1	Short and stout, almost straight	Long, slender and sinuous
Dentition of fingers of cheliped	Movable and immovable fingers with 3 teeth and 1 subdistal denticle each	1 tooth on movable finger, 2 backward curving teeth on movable finger
Anterolateral margins of carapace	Trilobed (inclusive of external orbital angle) lobes obtuse, subequal	Trilobed (inclusive of external orbital angle) first epibranchial lobe large, with 2 small lobes on either side, lobes acute to subacute

[a] Based on Sakai (1961).

[b] Sakai (1961:144) described the male abdomen in *L. hatagumoana* as consisting of "seven free segments. . . ." Whether the segments are freely movable or fused but with visible sutures can only be ascertained when the type specimens are examined. In all other species of *Lybia*, including the new species, *L. tutelina*, segments 3–5 are fused.

with segments 3–5 fused, sutures faint; distal end of segment 6 bilobed; telson with truncated apex. G1 stout, 2.3 times longer than G2, distal portion sparsely covered with long setae and conical spines, apex bifurcated, with petaloid terminal process; G2 with pointed distal process, short spines subterminally.

Paratype female.—Female similar to male, except for margins of second and third anterolateral lobes more distinctly denticulated.

Etymology.—The Latin "tutelina" is a general term for any guardian deity, and is here used as a noun in apposition.

Discussion

There are certain difficulties in placing this new species in the existing species alliances suggested by Guinot (1976) and Serène (1984). From the figures given by Sakai (1961:142, figs. 2a–d; 1965:162, pl. 80, fig. 1; 1976:pl. 180, fig. 3), *L. hatagumoana* appears related to *L. tutelina*, in terms of the sub-globular carapace which is only slightly longer than broad, the fingers of the cheliped being slightly longer than the palm, and the dentition of the cheliped fingers. However, *L. tutelina* has a much stouter, straighter and shorter G1 relative to G2, whereas in *L. hatagumoana*, the G1 is longer, slender and sinuous. In this respect, *L. tutelina* resembles *L. plumosa* (see Guinot 1976:94, fig. 21A–C) and *L. leptochelis* (see Guinot 1976:94, fig. 21E, F). Differences between *L. tutelina* and *L. hatagumoana* are tabulated in Table 1.

L. hatagumoana appears to be a rare species, being originally recorded from Amaidaba, off the coast of Hayama, by Sakai (1961) and thereafter only from the Wakayama Prefecture, Japan, by Nagai (1990).

The male holotype of *L. tutelina* was carrying an anemone in each chela as is typical of crabs in this genus. The ovigerous paratype female carried only one anemone (in the left chela), the right chela was free.

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